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Three-Year Short Courses in Agriculture and Horticulture

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Ohio St. Univ. Agri. & Horticulture 1917-18.

THE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State. It comprises eleven colleges and a graduate school: (1) Agriculture, (2) Arts, Philosophy and Science, (3) Commerce and Journalism, (4) Dentistry, (5) Education, (6) Engineering, (7) Homoeopathic Medicine, (8) Law, (9) Medicine, (10) Pharmacy, (11) Veterinary Medicine, and the Graduate School.

COLLEGE OF AGRICULTURE

The work in the College of Agriculture is arranged to meet the needs of four distinct groups of students:

Four-Year Curricula. The four-year curricula consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

Three-Year Curricula. The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

Winter Courses. The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

Extension Courses in Agriculture. Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

Bulletins describing the work of any of the above colleges or courses will be sent upon request. Address L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

THREE-YEAR SHORT COURSES IN AGRICULTURE

ANNOUNCEMENT

The short courses in the College of Agriculture are designed especially to meet the demands of young men on the farm who cannot find time to take the regular courses of the college or for those who have not the necessary educational requirements for admission to the longer courses. There has been a long-felt need for an agricultural course for the rural boy that will not take him away from the farm during the greater part of the growing season. There is also a feeling that the requirements for the four-year courses have been so high that many young men with high aspirations but only a common school education were barred. The short courses have been planned especially to overcome these objections and to meet the needs of the average farm boy.

These courses replace the two-year courses in Agriculture and Horticulture and provide very largely the same work except that they extend over three years of five months each instead of two years of nine months each and are given during the winter months (October-March). These courses are in no way supposed to equal, supplant, or be the equivalent of the four-year courses. Students having a high school education should take a four-year course.

REQUIREMENTS FOR ADMISSION

The short courses in both Agriculture and Horticulture are open to all students over 17 years of age who have completed the work of the eighth grade and have had one year of practical experience on the farm. A student must present a satisfactory certificate stating that he has had at least one year of practical experience on the farm since he was 12 years of age.

DATE OF OPENING

These courses will open this year on October 16 and will close March 15, 1918. A vacation will be given at the Holiday season.

OUTLINE OF THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

FIRST TERM			SECOND TERM		
Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Agricultural Engineering	(51)	4	Dairying	(52)	3
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

SECOND YEAR

Horticulture	(53)	4	Horticulture	(54)	4
Soils	(53)	3	Soils	(54)	3
Dairying	(53)	3	Agricultural Engineering	(52)	4
Rural Economics	(51)	4	Animal Husbandry	(54)	4
Farm Crops	(51)	4	Farm Crops	(52)	4
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Rural Economics	(52)	4	Agricultural Engineering	(54)	4
Animal Husbandry	(57)	4	Animal Husbandry	(56)	4
Military Drill		1	Military Drill		1

Choice of at least 7 hours from each group below:

Animal Husbandry	(59)	3	Animal Husbandry	(60)	3
Veterinary Medicine	(51)	3	Veterinary Medicine	(52)	3
Horticulture	(55)	4	Horticulture	(56)	4
Bacteriology	(51)	4	Entomology	(52)	4
Agricultural Engineering	(53)	3	Dairying	(56)	3
Animal Husbandry	(53)	4	Horticulture	(58)	4
Horticulture	(57)	4	Horticulture	(60)	4
Botany	(91)	4	Rural Economics	(54)	4
Rural Economics	(53)	4	Dairying	(58)	3
Dairying	(57)	3			
Forestry	(51)	4			
Entomology	(51)	4			
Dairying	(55)	3			

Certificates

At the conclusion of the course, students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent at the University.

OUTLINE OF THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

FIRST TERM			SECOND TERM		
Agricultural Chemistry	(51)	4	Agricultural Chemistry	(52)	4
Horticulture	(51)	4	Horticulture	(52)	4
Horticulture	(53)	4	Horticulture	(54)	4
English	(91)	2	English	(92)	2
Shopwork	(51)	2	Shopwork	(52)	2
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1

SECOND YEAR

Soils	(53)	3	Soils	(54)	3
Entomology	(51)	4	Entomology	(52)	4
Horticulture	(55)	4	Horticulture	(56)	4
Dairying	(52)	3	Dairying	(53)	3
Physical Education		1	Physical Education		1
Military Drill		1	Military Drill		1
Elective		3 or 4	Elective		3 or 4

Farm Projects to be carried during the summer vacation.

THIRD YEAR

Horticulture	(57)	4	Horticulture	(58)	4
Forestry	(51)	4	Horticulture	(60)	4
Rural Economics	(51)	4	Rural Economics	(52)	4
Military Drill		1	Military Drill		1
Elective		6	Elective		6

ELECTIVES

Animal Husbandry	(59)	3	Animal Husbandry	(60)	3
Bacteriology	(51)	4	Dairying	(56)	3
Dairying	(57)	3	Dairying	(58)	3
Animal Husbandry	(51)	4	Animal Husbandry	(52)	4
Horticulture	(59)	4	Horticulture	(66)	4
Horticulture	(65)	4	Horticulture	(64)	4
Dairying	(55)	3	Horticulture	(62)	4

STUDENTS WAITING TO REGISTER IN THE COLLEGE OF AGRICULTURE ON REGISTRATION DAY

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

The work in this department deals with the ingredients and food requirements of plants; the air and soil as sources of plant food; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, preservation, and losses; commercial fertilizers and their rational use; home mixing of fertilizers; methods of determining the needs of the soil; composition of feeding stuffs and dairy products.

AGRICULTURAL CHEMISTRY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year. Mr. Salter.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL ENGINEERING

The work in this department covers four distinct lines: (1) In the study of farm machinery an effort is made to familiarize the student with the fundamental principles underlying the leading types of farm machines, comparisons being made between the standard makes of implements. (2) Application of power to farming operations. Consideration is given to tractors, small engines, windmills, water power, horse power, etc. (3) Farm structures. Instruction is given pertaining to the locating and planning of farm buildings, estimating the cost of materials

for buildings, paints and painting, and concrete work in its various applications to the farm. (4) Drainage is considered from the field end of the work. Practice is given in the use of the drainage level, staking out systems, and establishing grades.

51. **Farm Structures.** Four credit hours. Either term. Mr. Ives.

Lectures and laboratory covering laying out the farm and locating the buildings and farm fences; construction of farm buildings, building materials, ventilation, painting, etc.; designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residences, etc.; concrete and its uses; water supply and lighting systems.

52. **Farm Machinery.** Four credit hours. Either term. Mr. Ramsower, Mr. Potter.

Lectures and laboratory covering the construction, operation, adjustment, assembling and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

53. **Concrete Construction.** Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the construction of simple objects.

54. **Farm Power.** Four credit hours. Second term. Mr. McCuen.

A study of power on the farm, including gasoline, oil, steam engines and windmills.

ANIMAL HUSBANDRY

Courses in this department include studies in the history, development, characteristics, and adaptations of the various breeds of horses, cattle, sheep, and swine; practice work in judging by the use of standard score cards and by judging groups, illustrated with living specimens from the University flocks and herds; the principles of nutrition, the composition of various feeding stuffs and the bearing of this data upon the practices of the feeder; the principles of breeding and their application to the methods concerned in the improvement of live stock; and

the principles and practical phases of live stock management, including both commercial and pure-bred aspects. Further opportunities for special study in dairy cattle are offered.

51-52. Types and Breeds of Live Stock. Four credit hours. The year. First year. Mr. Coffey, Mr. Stone.

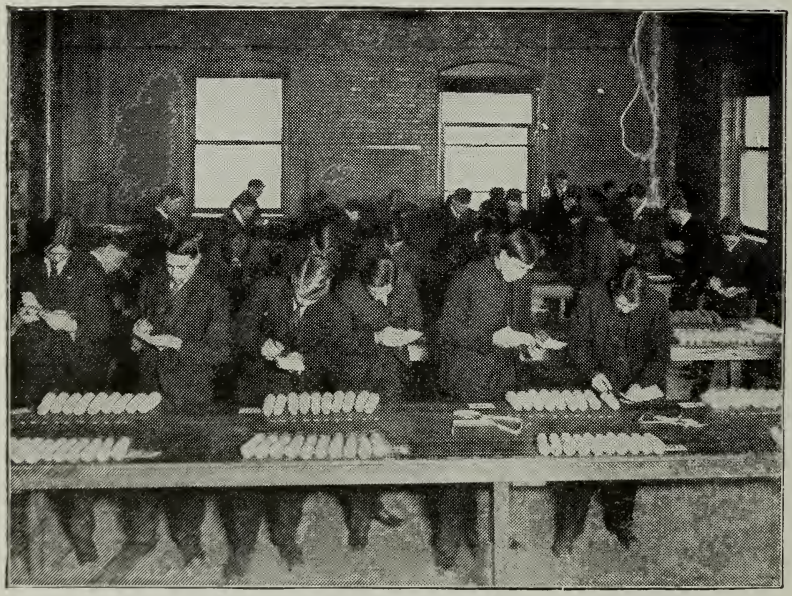
Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours each week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term. Prerequisite, Animal Husbandry 51-52. Mr. Salisbury.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Second term. Second year. Mr. Stone.

A study of the principles of nutrition, character and com-



CORN JUDGING

position of feed stuffs, and methods of feeding different kinds of farm animals under various conditions.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51-52. Mr. Kays.

This is a course for the short course men who have had the work of the first year in types and breeds of farm animals.

57. Live Stock Management. Four credit hours. First term. Mr. Coffey.

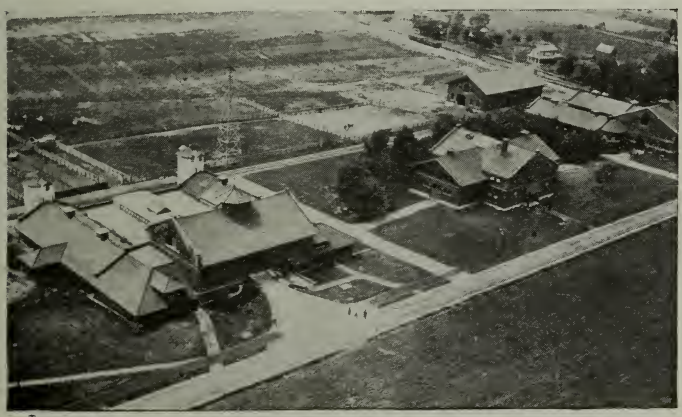
The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

POULTRY HUSBANDRY

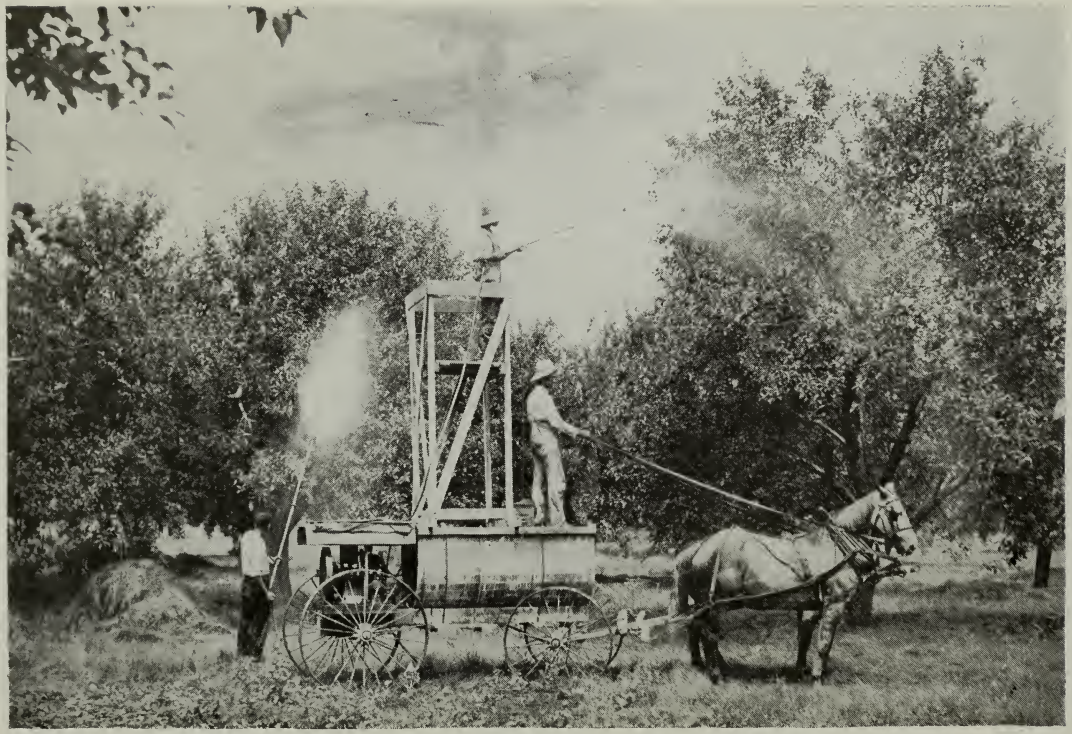
Equipment for Poultry Husbandry consists of a laying house, pens of all breeds of poultry, brooder house, colony houses, farm poultry house, and incubator cellar. Instruction is given in breeding, feeding, incubating, natural methods of hatching and rearing chicks, turkeys, ducks, and geese; much time is devoted to judging and scoring poultry; each student is required to care for incubators for a number of weeks.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the



BIRD'S-EYE VIEW OF THE LIVE STOCK BUILDINGS



STUDENTS SPRAYING IN THE UNIVERSITY ORCHARD

following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

BACTERIOLOGY

The courses offered in this department deal with the different types of bacteria and their activities, with special reference to the ones connected with soil operations and diseases of the soil; the part played by bacteria in the souring of milk, ripening of cream, sanitation of the dairy; contamination of food products and drinking water; the common infectious diseases, causes and methods of combating them.

51. **General Bacteriology.** Four credit hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BOTANY

91. **Elementary Plant Pathology.** Four credit hours. First term. Two recitations and two laboratory periods each week. Mr. Stover.

Text-book: Stevens and Hall's Diseases of Economic Plants.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

DAIRYING

The Department of Dairying offers the following lines of work: selection of dairy farms; selection and formation of profitable dairy herds; breeding of dairy cows for greater milk production; feeding dairy cows for more economical milk and butter-fat production; testing of cows for the Advanced Registries; the building of sanitary dairy barns and calf barns; milk bottling, butter-making, cheese-making, ice cream-making, and construction of refrigerating plants. Lectures and laboratory work will be given in city milk supply, the testing of dairy

products, and the manufacture of butter, cheese, ice cream, and condensed milk.

52. Elementary Dairying. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. First year, Three-Year Course in Agriculture. Mr. Cunningham.

Lectures will be given on the composition of milk and its products, and also regulations relating to dairy products. In the laboratory, practical work will be given in testing milk, skim milk, buttermilk and cream for butter fat; testing milk for acidity and adulteration.

53. Dairy Production and Manufacturing. Three credit hours. Either term. One lecture, one quiz, and one laboratory period each week. Second year, Three-Year Course in Agriculture. Prerequisite, Dairying 52. Mr. Erf, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter fat, and entering cows in the Advanced Registry and Registry of Merit. In the laboratory, practical work will be given in testing butter for moisture and salt; the handling and manufacturing of butter and cheese and the operation of cream separators.

THE CENTRAL PART OF THE CAMPUS

55. **Farm Cheesemaking.** Three credit hours. First term. Mr. Stoltz.

Lectures on cheesemaking and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. **Farm Buttermaking.** Three credit hours. Second term. Mr. Clevenger.

In the lecture room, the principles of buttermaking including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical buttermaking as adapted to farm conditions.

57-58. **Dairy Farm Management.** Three credit hours. The year. Mr. Erf.

Two lines of work are included in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

ENGLISH

Students in the Short Courses will be obliged to do a considerable amount of work in composition, paragraph-writing, punctuation, spelling, grammatical construction, speaking and debating.

91-92. **Elementary English.** Two credit hours. The year. Description, narration, exposition and argumentation. Mr. Dishong.

FARM CROPS

51-52. **Crop Production.** Four credit hours. The year. Mr. _____.

The first half of the year will be devoted to the study of corn and small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include:

(1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and care of seed, the preparation of the seed bed, cultural methods and harvesting of the crop. The laboratory work is planned to give the student training in the classification of different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purposes.

FORESTRY

Work in this department will deal with history of forestry, its objects and economic importance; the relation of forest and woodlands to soil, climate, and general welfare; care of farm woodlots; plantations for post and pole timber; cultivation and management of trees for specific purposes such as windbreaks, hedges, shade and ornament, maple syrup, nuts, etc; treatment of diseased and injured trees, together with a study of the trees and shrubs on the campus and University woodlot.

51. Farm Woodlot. Four credit hours. First term. Lectures, laboratory and field work. Mr. Scherer.

This course will present a brief history of forestry, pointing out its object and economic importance. The relation of woodlands to soil, climate, stream-flow, general welfare and the economic value of a good timber supply. Special plantations for post and pole timber; planting and management of forest trees for specific purposes such as wind-breaks, hedges, shade and ornament trees, maple syrup, nuts. The course will cover the subject of forestry as applied to the farm woodlot; grazing in relation to forestry; and wood preservation, treating principally fence posts and farm timbers. A prominent feature of the laboratory work will be getting acquainted with the trees; inspection of grazed and ungrazed forest areas; and the actual preservation of fence posts.

HORTICULTURE

In this department, practical instruction is given in the problem of fruit growing, relating especially to the home or farm orchard and small fruits. It includes propagation, pruning, budding, and grafting, spraying for the different orchard pests, cultivating, harvesting, and all operations relative to orchard-

ing; a thorough course in vegetable gardening covering cultural methods, soil and fertilizer requirements, favorable climatic conditions and locations, with each garden vegetable separately considered; landscape gardening, covering the making of lawns, walks, drives, the correct planting of trees, shrubs and flowers for the external adornment of home and public grounds. The Horticultural Building will enable the department to greatly elaborate the work in this line.

51. **Horticultural Plant Forms.** Four credit hours. First term. Horticulture, first year. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

52. **Horticultural Plant Forms.** Four credit hours. Second term. Horticulture, first year. Prerequisite, Horticulture 51. Mr. Davis.

A continuation of Horticulture 51.

53. **Principles of Horticulture.** Four credit hours. First term. Horticulture and Agriculture. Mr. Davis.

This course is essentially the same as Horticulture 101 and 102 adapted to the needs of the three-year students.

54. **Principles of Horticulture.** Four credit hours. Second term. Horticulture, first year. Mr. Davis.

A continuation of Horticulture 53.

55. **Vegetable Gardening.** Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. **Vegetable Gardening.** Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. **Pomology.** Four credit hours. First term. Horticulture, third year. Prerequisite, Horticulture 53-54. Mr. Paddock.

An adaptation of Horticulture 105 and 106 to the Short Courses.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Elective for agricultural students. Mr. Elwood.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.

A PRUNING CLASS

64. **Vegetable Gardening.** Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, disease and insect control, are special features considered.

65. **Floriculture.** Four credit hours. First term. Mr. Hottes.

A study of the principles of commercial flower culture, including soils, propagation, plotting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation and spraying. Important florist crops receive individual attention.

66. **Floriculture.** Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Hottes.

A continuation of Floriculture 65.

MILITARY DRILL

In accordance with the Morrill Act of 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all students to drill two years unless excused by the Military and Gymnasium Board. This work is under three commissioned officers of the regular army. The short course students are obliged to take military drill throughout the three years at the University.

RURAL ECONOMICS

The work in this department deals with the principles of accounting and their application to farm practices, different systems of keeping farm records, different systems of farm management, cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands. Special attention is paid to different advantages and problems of each system of farm management, together with their effect upon the soil; a study of production, distribution, transportation, and marketing of agricultural products; cooperative organizations of agriculture; cooperative management, insurance, and rural credit;

rural social life and organizations. Trips are taken frequently to nearby farms for study and comparison of different systems followed.

51. **Farm Accounts and Records.** Four credit hours. Either term.

The course deals with the fundamental principles of bookkeeping and their application to farm records.

52. **Farm Management.** Four credit hours. Either term.

Lectures, recitations, and visits to farms in the vicinity of Columbus.

The course includes a study of systems of farm management. The cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. **Cooperation in Agriculture.** Four credit hours. First term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agricultural products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. **Rural Community Life.** Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Two distinct courses are given in shopwork: carpentry and forging. The former includes sawing, planing, mortising, framing and other work involving the work of simple carpenter tools. In forging is taught the use and care of the forge, fire, and tools; practice in steel forging, including such operations as cutting, bending, drawing, shaping, and welding; the making, hardening, and tempering of steel punches, drills, and cold chisels.

51. **Carpentry.** Two credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. **Forging.** Two credit hours. Either term.

Practice in iron and steel forging, including such operations

as cutting, bending, drawing, upsetting, shaping and welding iron; hardening and tempering steel, etc.

CORN FIELD

VETERINARY MEDICINE

Courses are given in this department which deal with the more common disorders and diseases of domestic animals; common infectious diseases, minor surgery, castration, horse-shoeing, and soundness are carefully considered; a brief study is made of the anatomy of the horse and the ox.

51. **Agricultural Veterinary Medicine.** Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special attention to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. **Agricultural Veterinary Medicine.** Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horse-shoeing, soundness, and a brief discussion of the causes, symp-

toms and methods of handling the most important infectious diseases of Ohio live stock.

ZOOLOGY AND ENTOMOLOGY

This department offers systematic study of the different groups of insects with particular stress laid upon the injurious and beneficial insects; the proper times and methods for controlling and combating the parasitic insects; the economic importance of insects in agriculture; preparation of collections, etc.

51-52. Systematic and Practical Entomology. Four credit hours. The year. Mr. Hine.

FARM PROJECTS

In order to satisfy the requirements of the Short Courses, the student is required during the vacation between the second and third years to carry out on the farm, one of the projects from the list below. The election of this project must be made before the end of the second year and registered with the Secretary of th College. Each student's work will be supervised and inspected by the department in which the project has been chosen. The following are the projects which are submitted by the various departments:

AGRICULTURAL ENGINEERING

1—Design and Construction of Farm Buildings.
The student will be required to prepare plans of various types of farm buildings and also to construct smaller buildings such as poultry houses, individual hog houses, implement sheds, etc.

2—The Use and Handling of Cement and Concrete.
The aim of this project is to give the student practice in the handling of concrete. This will embrace the designing of forms and actual construction of some piece or pieces of concrete work, such as watering troughs, fence posts, floors, walks, milk houses, garages, cement tile, etc.

3—Laying out and Installing a Drainage System.
The student will be required to lay out and map a drainage system covering several acres, perform the necessary leveling work and execute at least a portion of the planning.

4—The Design and Installation of Home and Farm Conveniences.
This includes the preparation of plans covering the design or installation or both, of such pieces of work as water supply system, a lighting system, sewage disposal system, etc.

5—Testing the Draft of Farm Implements.
The student will be furnished with proper equipment for the study of the draft of various implements used on the farm.

ANIMAL HUSBANDRY

1—Hog Feeding.
The feeding of hogs in which a comparison is made of the influence of corn alone as a ration, with corn and tankage or skimmed milk.

2—Township Survey of Purebred Stock.
A local township survey of improved herds in comparative study with unimproved.

3—Cost of Feeding Dairy Cattle.
The keeping of records of cost of feed and keep, and yield of milk of dairy cows.

4—Lamb Management.
The care and management of lambs from birth to five months of age.

5—Feeding Work Horses.
The feeding of work horses, in which comparisons are made of the influence of two different rations fed two different horses in the same work team.

6—Cost of Feeding Fattening Cattle.
On the cost of keeping and feeding fattening cattle.

DAIRYING

For the second and third summer seasons of the three-year course in agriculture.

1—Cost of Milk and Butter-fat Production.
Keeping a cost account of the milk and butter-fat production of the home herd.

2—Liberal Feeding vs. Conservative Feeding.
The profitableness of liberal feeding compared with conservative feeding—the herd to be divided into two lots, one lot of cows to be fed liberally and the other conservatively (supposed to be the average economic condition).

3—Profits from Improved Rations.
Determining the profits from feeding various improved rations in comparison with the ration already in vogue on the farm.

4—Profitable Methods of Feeding Dairy Calves.
Most profitable methods of feeding dairy calves to get the greatest returns when they are two-year-old heifers.

5—Cost of Butter-making at Home.
The profitableness and the cost of making butter at home. Samples to be sent to the University each week to be scored.

6—Cost of Home Cheesemaking.
Profitableness and cost of making cheeses at home. Samples to be sent to the University each week to be scored.

FARM FORESTRY

1—Planting Trees for Farm Use.
Planting seedling catalpa, locust, and other trees for farm use and measuring growth.

2—Germination of Seeds of Forest Trees.
Planting seeds of forest trees; noting their germination and measuring growth.

3—Survey of Woodlots.
Pasturing woodlots; amount and kind of stock; advantages and disadvantages of each kind.

4—Rate of Growth of Trees.
Measuring diameter growth of trees to learn annual increase, and time when growth is most rapid.

5—Census of Woodlot.
Listing the kind of trees in a farm woodlot, and finding the number and average size of each.

6—Survey of Diseased Trees in Woodlot.
Noting diseased and deformed trees in a farm woodlot with report of causes.

FIELD CROPS

1—Variety Testing.
The testing of varieties and strains of cereals and other field crops with reference to disease resistance, character of growth, quality, yield, etc.

2—Individual Selection.

Investigating the yielding qualities and other characters of ears of corn, heads of small grains, individual plants of soy beans and other forage crops.

3—Rates of Seeding.

Investigation to determine the best rate at which to seed the various field crops.

4—Inoculation Test.

Investigation of the various methods of inoculating soils for leguminous crops.

5—Preparation of Seed Bed.

Comparison of the methods of preparing seed beds for the various field crops. Such problems as early and late plowing, deep and shallow plowing for corn and other crops are examples of experiments included in the project.

HORTICULTURE

1—Thinning Apples.

First pick off all wormy, diseased, inferior fruit and reduce clusters to one fruit. Second, same as No. 1, and thin fruit to four inches apart. Third, same as No. 1, and thin fruit to six inches apart.

2—Mulching Apple Trees.

Mulch sod-bound apple trees with straw or manure and note effect on growth, yield, size, color and quality of fruit, time of maturing and keeping qualities as compared with fruit from unmulched trees.

3—Home Gardening.

Plan and develop a home vegetable garden of from ¼ to ½ acre, keeping records of all expenses, including labor, yields and net returns.

4—Potato Culture.

Demonstrate the efficiency and practicability of growing potatoes by the mulching system.

5—Tomato Culture.

Demonstrate the relative merits of the practice of staking tomatoes as regards yield, maturity, disease, cost of production and net returns.

1—A System of Farm Cost Accounting and Records.
This project consists of the establishing of a cost accounting system upon a farm, and will be supplemented by all the necessary records for the type of farming studied.

2—Methods of Operating Farm Lands.
A study of the different methods of operating farms in a given community by owners and tenants will be made. The various forms of tenancy are to be studied both from the landlord's and tenant's point of view, with particular attention given to the points included in their contracts and how successfully they are worked out.

3—Types of Farming.
A survey of the types of farming in the home community; reasons for their development and suggestions for improvement.

4—An Analysis of the Farm Business.
A study in farm organization made by the analysis of figures collected from a number of farms in the community.

5—Relation of Farm Equipment to Size of Farm.
The relation of the kind and value of farm equipment to the size of farm and type of farming.

6—Rural Organization.
A study of the social and business relations of the residents of a rural community.

Registration for the Short Courses

It is necessary for the faculty of the College of Agriculture to know as accurately as possible the number of students who expect to attend the course in order that proper arrangements may be made for their accommodation.

All persons who expect to enroll in either of the Short Courses are requested to make application to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

FEES AND EXPENSES

The cost of a course at the University is the vital problem with many students. The expense of a year in college is very largely a personal matter, depending upon the economies or extravagances of the student. Some students will spend two or three times as much as others, consequently no fixed cost can be stated. The following is a list of expenses actually required the first year in the Short Courses. The expenses the next two years will be practically the same:

Incidental fee	$ 20 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposit to cover laboratory material	20 00
Uniform	12 00
Books	12 00
Board (20 weeks at $3.50 per week)	70 00
Room rent ($8.00 per month)	40 00
Total	$180 00

No account is taken in the above statement of general expenses, such as clothing, laundry, etc. One should plan to spend, in addition to the above amount, from $50.00 to $75.00 for other living necessities. The cost of some of the above items may be reduced slightly, such as room rent, in the event of two students rooming together.

A student should come prepared to spend about $50.00 during the first ten days of the term. After that his board and room rent will be the chief items of expense.

OPPORTUNITIES FOR SELF-HELP

Many students secure employment of different kinds to aid in defraying their college expenses. Many find employment on the University farm, for which they are paid at the rate of 15 to 20 cents per hour. Others fire furnaces, mow lawns, wait on tables at boarding houses, clerk in stores on Saturdays. **The University does not guarantee or promise work to any one.** The matter of getting employment is left entirely to the student. One with initiative seldom experiences difficulty in finding as much employment as his time will permit.

It is to be remembered that the average student has all he can do to carry his college course without attempting to do outside work. To earn a living and carry a college course is practically impossible and usually culminates in the nervous breakdown of the student. If one expects to pay any large portion of his expenses by outside employment it is highly advisable to arrange to be in school longer than the time actually outlined in the course.

FREE SCHOLARSHIPS FOR THREE-YEAR SHORT COURSES

One scholarship is assigned to each county of the State each year, and is good for three consecutive years in either the short course in Agriculture or the short course in Horticulture, thereby making a total of three scholarships in effect in each county at one time.

AWARDING OF SCHOLARSHIPS

These scholarships are awarded by the Agricultural Commission as prizes in the Junior Contest work conducted by the Commission.

1—The scholarship in each county shall be awarded to the contestant who is eligible to admission to the Short Courses and stands highest in the contest in which there is the greatest number of entries. In other words, if there are wheat growing, apple growing, and corn growing contests, or any other contests conducted by the Commission, the winner of the first prize in the contest having the greatest number of participants shall be the recipient of the scholarship.

2—The recipient of the scholarship must be at least 17 years of age at the time of the beginning of the first term of school of the year in which the contest is held.

3—The scholarships are open to both sexes.

4—The scholarship must be used the first year it becomes available.

5—The scholarships are not transferable.

6—Should the recipient of the scholarship not desire the benefits of the same it will automatically revert to the next highest in the eligible list.

VALUE OF SCHOLARSHIP

The free scholarship will cover the registration fees. Its value will be $20.00 per year, or $60.00 for three years.

RULES GOVERNING SCHOLARSHIPS

All rules governing the awarding of free scholarships, as well as any change in the same, will be made by the State Agricultural Commission.

For further particulars address either the Ohio Agricultural Commission, Columbus, Ohio, or the Dean of the College of Agriculture, Ohio State University, Columbus, Ohio.

STUDENTS JUDGING HORSES IN ACTION

The Ohio State University Bulletin is issued at least twenty times during the year; monthly in June, July, August, and September, and biweekly in October, November, December, January, February, March, April, and May.

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The Ohio State University Bulletin

VOLUME XX MARCH, 1916 NUMBER 23

Three Year Short Courses in Agriculture and Horticulture

October 17 to March 16
1916-1917

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

Entered as second-class matter November 17, 1905, at the postoffice at Columbus, Ohio, under Act of Congress, July 16, 1894

Students Waiting to Register in the College of Agriculture on Registration Day

THE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State. It comprises eleven colleges and a graduate school: (1) Agriculture, (2) Arts, Philosophy and Science, (3) Commerce and Journalism, (4) Dentistry, (5) Education, (6) Engineering, (7) Homoeopathic Medicine, (8) Law, (9) Medicine, (10) Pharmacy, (11) Veterinary Medicine, and the Graduate School.

COLLEGE OF AGRICULTURE

The work in the College of Agriculture is arranged to meet the needs of four distinct groups of students:

FOUR-YEAR CURRICULA. The four-year curricula consist of regular collegiate courses of the University and lead to the degree of Bachelor of Science. These courses offer opportunity for specialization in Agriculture, Horticulture, Forestry, Landscape Architecture, Applied Entomology, and Home Economics.

THREE-YEAR CURRICULA. The three-year curricula in Agriculture and Horticulture are adapted to the needs of farm boys who find it impossible to avail themselves of the four-year curricula, especially those who have not had the advantage of a high school education. They are not recommended for students who can meet the entrance requirements to the four-year curricula.

WINTER COURSES. The College of Agriculture offers three winter courses for the benefit of those who cannot leave their farm work except during the winter months. These courses are in general agriculture, poultry husbandry and dairying. They begin the first week in January and continue for eight weeks. There are no educational requirements for admission to these courses. Special bulletins describing the winter courses will be mailed on request.

EXTENSION COURSES IN AGRICULTURE. Extension Courses in Agriculture are given during the winter months in the various counties of the State. These courses are one week in length and are designed to give practical instruction in the local agricultural and domestic problems.

Bulletins describing the work of any of the above colleges or courses will be sent upon request. Address L. E. Wolfe, Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

THREE-YEAR SHORT COURSES IN AGRICULTURE

ANNOUNCEMENT

The short courses in the College of Agriculture are designed especially to meet the demands of young men on the farm who cannot find time to take the regular courses of the college or for those who have not the necessary educational requirements for admission to the longer courses. There has been a long-felt need for an agricultural course for the rural boy that will not take him away from the farm during the greater part of the growing season. There is also a feeling that the requirements for the four-year courses have been so high that many young men with high aspirations but only a common school education were barred. The short courses have been planned especially to overcome these objections and to meet the needs of the average farm boy.

The newly designed courses will replace the recent two-year courses in Agriculture and Horticulture and will provide very largely the same work except that they will extend over three years of five months each instead of two years of nine months each and will be given during the winter months (October-March). These courses are in no way supposed to equal, supplant, or be the equivalent of the four-year courses. Students having a high school education should take a four-year course.

REQUIREMENTS FOR ADMISSION

The short courses in both Agriculture and Horticulture are open to all students over 17 years of age who have completed the work of the eighth grade and have had one year of practical experience on the farm. A student must present a satisfactory certificate stating that he has had at least one year of practical experience on the farm since he was 12 years of age.

DATE OF OPENING

These courses will open this year on October 17 and will close March 16, 1917. A vacation will be given at the Holiday season.

OUTLINE OF THREE-YEAR SHORT COURSE IN AGRICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry (51)	4	Agricultural Chemistry (52)	4
Animal Husbandry (51)	4	Animal Husbandry (52)	4
Agricultural Engineering (51)	4	Dairying (52)	3
English (91)	3	English (92)	3
Shopwork (51)	3	Shopwork (52)	3
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1

SECOND YEAR

Horticulture (53)	4	Horticulture (54)	4
Soils (53)	3	Soils (54)	3
Dairying (53)	3	Agricultural Engineering (52)	4
Rural Economics (51)	4	Animal Husbandry (54)	4
Farm Crops (51)	4	Farm Crops (52)	4
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1
Farm Projects to be carried during the summer vacation			2

THIRD YEAR

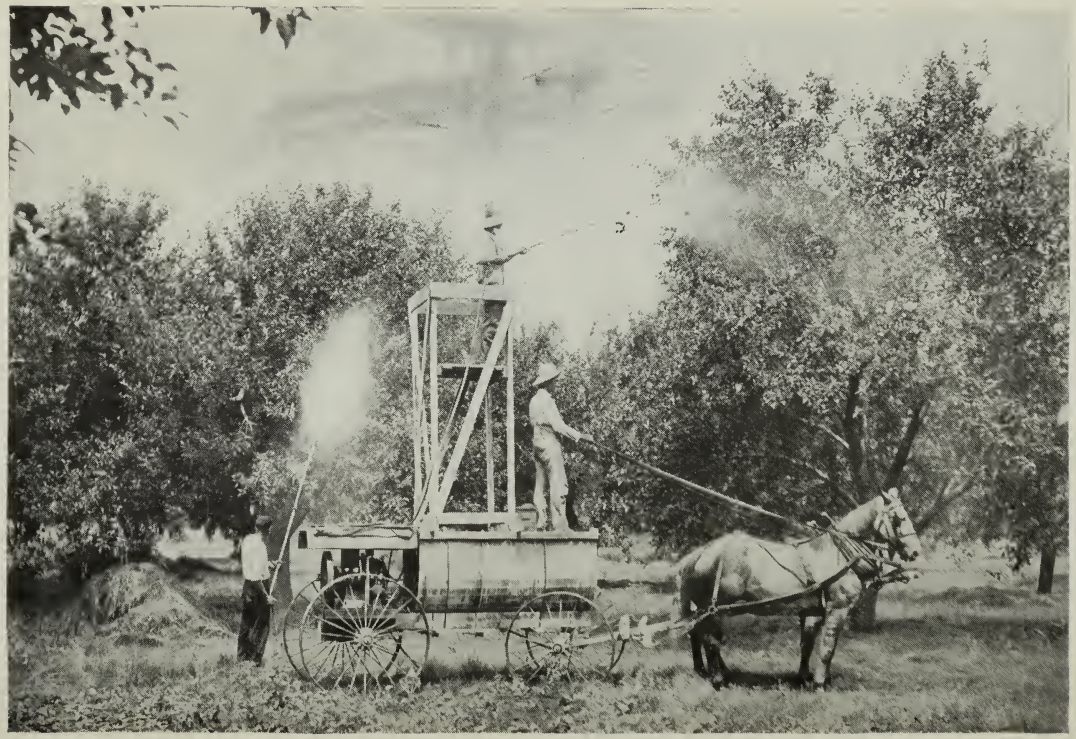
Rural Economics (52)	4	Agriculture Engineering (54)	4
Animal Husbandry (57)	4	Animal Husbandry (56)	4
Military Drill	1	Military Drill	1

Choice of at least 7 hours from each group below:

Animal Husbandry (59)	3	Animal Husbandry (60)	3
Veterinary Medicine (51)	3	Veterinary Medicine (52)	3
Horticulture (55)	4	Horticulture (56)	4
Bacteriology (51)	4	Zoology (92)	4
Agricultural Engineering (53)	3	Dairying (56)	3
Animal Husbandry (53)	4	Horticulture (58)	4
Horticulture (57)	4	Horticulture (60)	4
Botany (91)	4	Rural Economics (54)	4
Rural Economics (53)	4	Dairying (58)	3
Dairying (57)	3		
Forestry (51)	4		
Zoology (91)	4		
Dairying (55)	3		

Certificates

At the conclusion of the course, students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent at the University.



Students Spraying in the University Orchard

OUTLINE OF THREE-YEAR SHORT COURSE IN HORTICULTURE

FIRST YEAR

FIRST TERM		SECOND TERM	
Agricultural Chemistry (51)	4	Agricultural Chemistry (52)	4
Horticulture (51)	4	Horticulture (52)	4
Horticulture (53)	4	Horticulture (54)	4
English (91)	3	English (92)	3
Shopwork (51)	3	Shopwork (52)	3
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1

SECOND YEAR

Soils (53)	3	Soils (54)	3
Zoology (91)	4	Zoology (92)	4
Horticulture (55)	4	Horticulture (56)	4
Dairying (52)	3	Dairying (53)	3
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1
Elective	3 or 4	Elective	3 or 4

Farm Projects to be carried during the summer vacation 2

THIRD YEAR

Horticulture (57)	4	Horticulture (58)	4
Forestry (51)	4	Horticulture (60)	4
Rural Economics (51)	4	Rural Economics (52)	4
Military Drill	1	Military Drill	1
Elective	6	Elective	6

ELECTIVES

Animal Husbandry (59)	3	Animal Husbandry (60)	3
Bacteriology (51)	4	Dairying (56)	3
Dairying (57)	3	Dairying (58)	3
Animal Husbandry (51)	4	Animal Husbandry (52)	4
Horticulture (59)	4	Horticulture (66)	4
Horticulture (65)	4	Horticulture (64)	4
Dairying (55)	3	Horticuture (62)	4

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY AND SOILS

The work in this department deals with the ingredients and food requirements of plants; the air and soil as sources of plant food; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, preservation, and losses; commercial fertilizers and their rational use; home mixing of fertilizers; methods of determining the needs of the soil; composition of feeding stuffs and dairy products.

AGRICULTURAL CHEMISTRY

51-52. Application of Chemistry to Agriculture. Four credit hours. The year.

Lectures, recitations, and demonstrations of the chemical elements concerned in plant growth. Composition of plants; ash, protein, fiber, fat, carbohydrates. Chemical changes in plant growth. Factors affecting composition of plants. Feeding standards and nutritive ratio.

SOILS

53-54. Elementary Soils. Three credit hours. The year.

Lectures and recitations on the constituents of plants, essentials and non-essentials, sources of plant food, origin and nature of soils, soil exhaustion, and amelioration, farm manures, commercial fertilizers, lime and other soil amendments.

AGRICULTURAL ENGINEERING

The work in this department covers four distinct lines: (1) In the study of farm machinery an effort is made to familiarize the student with the fundamental principles underlying the leading types of farm machines, comparisons being made between the standard makes of implements. (2) Application of power to farming operations. Consideration is given to tractors, small engines, windmills, water power, horse power, etc. (3) Farm structures. Instruction is given pertaining to the locating and planning of farm buildings, estimating the cost

of materials for buildings, paints and painting, and concrete work in its various applications to the farm. (4) Drainage is considered from the field end of the work. Practice is given in the use of the drainage level, staking out systems, and establishing grades.

51. Farm Structures. Four credit hours. Either term. Mr Ramsower.

Lectures and laboratory covering (a) laying out the farm and locating the buldings; (b) construction of farm buildings, building materials, ventilation, painting, etc.; (c) designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residence, etc.; (d) concrete and its uses.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower.

Lectures and laboratory covering the construction, operation, adjustment, assembling, and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

53. Concrete Construction. Three credit hours. First term. Mr. Ives.

Lectures on the manufacture and use of cement and concrete. Laboratory work consists of simple tests of cement and of concrete materials. The making of forms and the constructions of simple objects.

54. Farm Power. Four credit hours. Second term. Mr. Ramsower.

A study of power on the farm, including gasoline, oil and steam engines, windmills, water supply, and lighting systems.

ANIMAL HUSBANDRY

Courses in this department include studies in the history, development, characteristics, and adaptations of the various breeds of horses, cattle, sheep, and swine; practice work in judging by the use of standard score cards and by judging groups, illustrated with living specimens from the University flocks and herds; the principles of nutrition, the composition of various feeding stuffs and the bearing of this data upon the practices of the feeder; the principles of breeding and their application to the methods concerned in the improvement of live stock; and the principles and practical phases of live stock management, including both commercial and pure-bred aspects. Further opportunities for special study in dairy cattle are offered.

51-52. Types and Breeds of Live Stock. Four credit hours. The year.

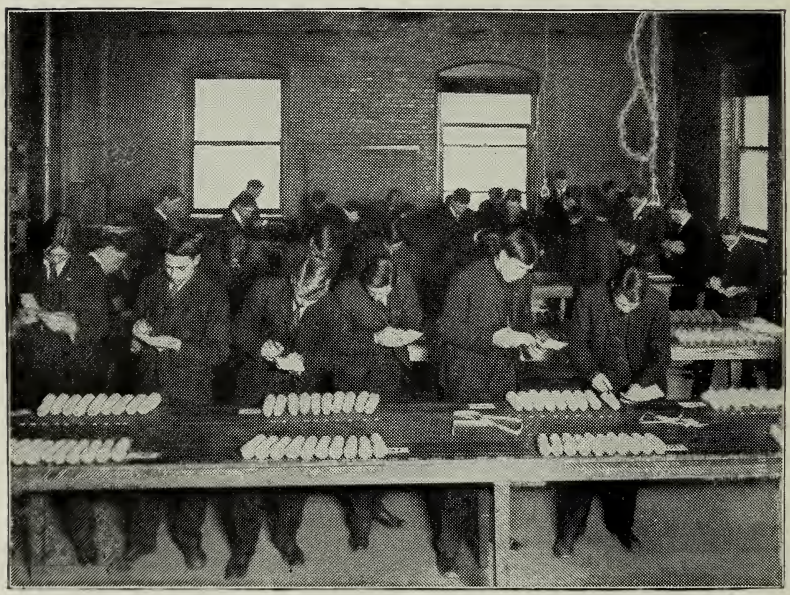
Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours per week, both score card and comparative judging being used.

53. Dairy Cattle. Four credit hours. First term.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

54. Feeding. Four credit hours. Second term. Second year.

A study of the principles of nutrition, character and composition of feed stuffs, and methods of feeding different kinds of farm animals under various conditions.



Corn Judging

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51 and 52.

57. Live Stock Management. Four credit hours. First term.

The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

POULTRY HUSBANDRY

Equipment for Poultry Husbandry consists of a laying house, pens of all breeds of poultry, brooder house, colony houses, farm poultry house, and incubator cellar. Instruction is given in breeding, feeding, incubating, natural methods of hatching and rearing chicks, turkeys, ducks, and geese; much time is devoted to judging and scoring poultry; each student is required to care for incubators for a number of weeks.

59-60. Poultry Husbandry. Three credit hours. The year. Mr Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

Bird's-eye View of the Live Stock Buildings

BACTERIOLOGY

The courses offered in this department deal with the different types of bacteria and their activities, with special reference to the ones connected with soil operations and diseases of the soil; the part played by bacteria in the souring of milk, ripening of cream, sanitation of the dairy; contamination of food products and drinking water; the common infectious diseases, causes and methods of combating them.

51. General. Four hours. First term.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

BOTANY

91. Elementary Plant Pathology. Four credit hours. First term. Two recitations and two laboratory periods. Text-book: Stevens and Hall's Diseases of Economic Plants. Mr. Stover.

The more common diseases of the important cultivated crops are considered in respect to symptoms, cause, nature, and extent of injury and control.

DAIRYING

The Department of Dairying offers the following lines of work selection of dairy farms; selection and formation of profitable dairy herds; breeding of dairy cows for greater milk production; feeding dairy cows for more economical milk and butter-fat production; testing of cows for the Advanced Registries; the building of sanitary dairy barns and calf barns; milk bottling, butter-making, cheese-making, ice cream-making, and construction of refrigerating plants. Lectures and laboratory work will be given in city milk supply, the testing of dairy products, and the manufacture of butter, cheese, ice cream, and condensed milk.

52. Dairy Production. Three credit hours. Either term. First year. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the composition of milk and the forma-

tion of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter-fat; and entering of cows in the Advanced Registry. In the laboratory, practical work will be given in testing milk and cream for butter-fat and testing dairy herds for butter-fat production.

53. Farm Dairy Manufactures. Three credit hours. Either term. Second year. Mr. Erf, Mr. Cunningham, Mr. Stoltz, Mr. Clevenger.

Lectures will be given on laws and regulations relating to dairy products, the handling of milk on the farm, and the manufacture of dairy products on the farm. Laboratory work will be given in testing cream, butter, and cheese, the handling and manufacture of butter and cheese and the designing of dairy barns and milk houses.

The Central Part of the Campus

55. Farm Cheese-Making. Three credit hours. First term. Mr. Stoltz.

Lectures on cheese-making and laboratory work will be given in the manufacture of cheddar, Swiss, brick, cream, Neufchatel, cottage and pimento cheeses. Practical work will be given in the manufacture of both hard and soft cheese that can be economically produced in farm dairies.

56. Farm Butter-Making. Three credit hours. Second term. Mr. Clevenger.

In the lecture room, the principles of butter-making including pasteurization, ripening, churning, packing and marketing of butter will be thoroughly discussed. Laboratory work will consist of practical butter-making as adapted to farm conditions.

57-58. Dairy Farm Management. Three credit hours. The year. Mr. Erf.

Two lines of work are included in this course. First, Economical Dairying. This consists of visiting five dairy farms, and determining the profit or loss and sanitary conditions of these farms. A complete description of these farms is required, and also suggestions as to improvements in methods used. Second, Investigational Work. This consists in working out some practical problems along dairy lines that have to do with the production of milk or its products.

ENGLISH

Students in the Short Courses will be obliged to do a considerable amount of work in composition, paragraph-writing, punctuation, spelling, grammatical construction, speaking and debating.

91-92. Paragraph Writing. Three credit hours. The year. Description, narration, exposition, argumentation.

FARM CROPS

51-52. Crop Production. Four credit hours. The year. Mr. Livingston.

The first half of the year will be devoted to the study of corn and the small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and the care of seed, the preparation of the seed bed, cultural methods and the harvesting of the crop. The laboratory work is planned to give the student training in the classification of the different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purpose.

The work is planned with special reference to Ohio conditions.

FORESTRY

Work in this department will deal with history of forestry, its objects and economic importance; the relation of forest and woodlands to soil, climate, and general welfare; care of farm woodlots; plantations for post and pole timber; cultivation and management of trees for specific purposes such as windbreaks, hedges, shade and ornament, maple syrup, nuts, etc.; treatment of diseased and injured trees, together with a study of the trees and shrubs on the campus and University woodlot.

51. Introduction to Forestry. Four credit hours. First term. Lectures, laboratory, and field work. Mr. Lazenby.

This course will present a brief history of forestry, pointing out its objects and economic importance. The relation of woodlands to soil, climate, streamflow and general welfare. The economic value of a good timber supply; improvement and care of farm woodlots; special plantations for post and pole timber; planting and management of forest trees for specific purposes such as windbreaks, hedges, shade and ornament trees, maple syrup, and nuts. A prominent feature of the course will be getting acquainted with the trees and shrubs on the campus and in the University woodlot.

HORTICULTURE

In this department, practical instruction is given in the problem of fruit growing, relating especially to the home or farm orchard and small fruits. It includes propagation, pruning, budding, and grafting, spraying for the different orchard pests, cultivating, harvesting, and all operations relative to orcharding; a thorough course in vegetable gardening covering cultural methods, soil and fertilizer requirements, favorable climatic conditions and locations, with each garden vegetable separately considered; landscape gardening, covering the making of lawns, walks, drives, the correct planting of trees, shrubs and flowers for the external adornment of home and public grounds. The new Horticultural Building will enable the department to greatly elaborate the work in this line.

51. Horticultural Plant Forms. Four credit hours. First term. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. Second term. First year.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Mr. Davis.

54. Principles of Horticulture. Four credit hours. Second term. Mr. Davis.

A continuation of Horticulture 53.

55. Vegetable Gardening. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Horticulture 55.

57. Pomology. Four credit hours. First term. Prerequisite, Horticulture 53-54. Mr. Paddock.

58. Pomology. Four credit hours. Second term. Mr. Paddock.

A continuation of Horticulture 57.

59. Pomology. Four credit hours. First term. Prerequisite, Horticulture 57-58. Mr. Paddock.

A continuation of Horticulture 57 and 58.

60. Landscape Gardening. Four credit hours. Second term. Prerequisite, Agricultural Engineering 53. Mr. Montgomery.

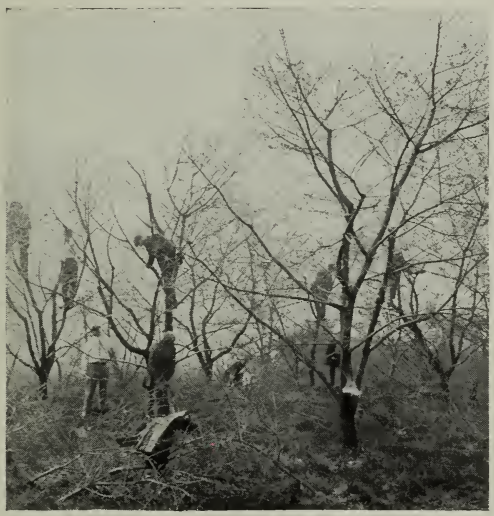
A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines, and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared.

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery.

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.

64. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, diseases, and insect control, are special features considered.



A Pruning Class

65. Floriculture. Four credit hours. First term. Mr. Montgomery.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation, and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Prerequisite, Horticulture 65. Mr. Montgomery.

A continuation of Horticulture 65.

MILITARY DRILL

In accordance with the Morrill act of 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all students to drill two years unless excused by the Military and Gymnasium Board. This work is under an officer of the regular army. The short course students are obliged to take military drill throughout the three years at the University.

RURAL ECONOMICS

The work in this department deals with principles of accounting and their application to farm practices, different systems of keeping farm records, different systems of farm management, cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands. Special attention is paid to different advantages and problems of each system of farm management, together with their effect upon the soil; a study of production, distribution, transportation, and marketing of agricultural products; cooperative organizations of agriculture; cooperative management, insurance, and rural credit; rural social life and organizations. Trips are taken frequently to nearby farms for study and comparison of different systems followed.

51. Farm Accounts and Records. Four credit hours. Either term.

The course deals with the fundamental principles of bookkeeping and their application to farm records.

52. Farm Management. Four credit hours. Either term.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a study of systems of farm management. The cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agriculture products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

SHOPWORK

Two distinct courses are given in shopwork: carpentry and forging. The former includes sawing, planing, mortising, framing and other work involving the work of simple carpenter tools. In forging is taught the use and care of the forge, fire, and tools; practice in steel forging, including such operations as cutting, bending, drawing, shaping, and welding; the making, hardening, and tempering of steel punches, drills, and cold chisels.

51. Carpentry. Three credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Three credit hours. Either term.

Practice in steel and iron forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; hardening and tempering steel, etc.

Corn Field

VETERINARY MEDICINE

Courses are given in this department which deal with the more common disorders and diseases of domestic animals; common infectious diseases, minor surgery, castration, horse-shoeing, and soundness are carefully considered; a brief study is made of the anatomy of the horse and the ox.

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horses and cattle, with special reference to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horse-shoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio live stock.

ZOOLOGY AND ENTOMOLOGY

This department offers systematic study of the different groups of insects with particular stress laid upon the injurious and beneficial insects; the proper times and methods for controlling and combating the parasitic insects; the economic importance of insects in agriculture; preparation of collections, etc.

91-92. Systematic and Practical Entomology. Four credit hours. The year.

FARM PROJECTS

In order to satisfy the requirements of the Short Courses, the student is required during the vacation between the second and third years to carry out on the farm, one of the projects from the list below. The election of this project must be made before the end of the second year and registered with the Secretary of the College. Each student's work will be supervised and inspected by the department in which the project has been chosen. The following are the projects which are submitted by the various departments:

AGRICULTURAL ENGINEERING

1—Design and Construction of Farm Buildings.

The student will be required to prepare plans of various types of farm buildings and also to construct smaller buildings such as poultry houses, individual hog houses, implement sheds, etc.

2—The Use and Handling of Cement and Concrete.

The aim of this project is to give the student practice in the handling of concrete. This will embrace the designing of forms and actual construction of some piece or pieces of concrete work, such as watering trough, fence posts, floors, walks, milk houses, garages, cement tile, etc.

3—Laying out and Installing a Drainage System.

The student will be required to lay out and map a drainage system covering several acres, perform the necessary leveling work and execute at least a portion of the planning.

4—The Design and Installation of Home and Farm Conveniences.

This includes the preparation of plans covering the design or installation or both, of such pieces of work as water supply system, a lighting system, sewage disposal system, etc.

5—Testing the Draft of Farm Implements.

The student will be furnished with proper equipment for the study of the draft of various implements used on the farm.

ANIMAL HUSBANDRY

1—Hog Feeding.

The feeding of hogs in which a comparison is made of the influence of corn alone as a ration, with corn and tankage or skimmed milk.

2—Township Survey of Purebred Stock.

A local township survey of improved herds in comparative study with unimproved.

3—Cost of Feeding Dairy Cattle.

The keeping of records of cost of feed and keep, and yield of milk of dairy cows.

4—Lamb Management.

The care and management of lambs from birth to five months of age.

5—Feeding Work Horses.

The feeding of work horses, in which comparisons are made of the influence of two different rations fed two different horses in the same work team.

6—Cost of Feeding Fattening Cattle.

On the cost of keeping and feeding fattening cattle.

DAIRYING

For the second and third summer seasons of the three-year course in agriculture.

1—Cost of Milk and Butterfat Production.

Keeping a cost account of the milk and butterfat production of the home herd.

2—Liberal Feeding vs. Conservative Feeding.

The profitableness of liberal feeding compared with conservative feeding—the herd to be divided into two lots, one lot of cows to be fed liberally and the other conservatively (supposed to be the average economic condition).

3—Profits from Improved Rations.

Determining the profits from feeding various improved rations in comparison with the ration already in vogue on the farm.

4—Profitable Methods of Feeding Dairy Calves.

Most profitable methods of feeding dairy calves to get the greatest returns when they are two-year-old heifers.

5—Cost of Buttermaking at Home.

The profitableness and the cost of making butter at home. Samples to be sent to the University each week to be scored.

6—Cost of Home Cheesemaking.

Profitableness and cost of making cheeses at home. Samples to be sent to the University each week to be scored.

FARM FORESTRY

1—Planting Trees for Farm Use.

Planting seedling catalpa, locust, and other trees for farm use and measuring growth.

2—Germination of Seeds of Forest Trees.

Planting seed of forest tree; noting their germination and measuring growth.

3—Survey of Woodlots.

Pasturing woodlots; amount and kind of stock; advantages and disadvantages of each kind.

4—Rate of Growth of Trees.

Measuring diameter growth of trees to learn annual increase, and time when growth is most rapid.

5—Census of Woodlot.

Listing the kind of trees in a farm woodlot, and finding the number and average size of each.

6—Survey of Diseased Trees in Woodlot.

Noting diseased and deformed trees in a farm woodlot with report of causes.

FIELD CROPS

1—Variety Testing.

The testing of varieties and strains of cereals and other field crops with reference to disease resistance, character of growth, quality, yield, etc.

2—Individual Selection.

Investigating the yielding qualities and other characters of ears of corn, heads of small grains, individual plants of soy beans and other forage crops.

3—Rates of Seeding.

Investigation to determine the best rate at which to seed the various field crops.

4—Inoculation Test.

Investigation of the various methods of inoculating soils for leguminous crops.

5—Preparation of Seed Bed.

Comparison of the methods of preparing seed beds for the various field crops. Such problems as early and late plowing, deep and shallow plowing for corn and other crops are examples of experiments included in the project.

HORTICULTURE

1—Thinning Apples.

First pick off all wormy, diseased inferior fruit and reduce clusters to one fruit. Second. Same as No. 1, and thin fruit to four inches apart. Third, same as No. 1, and thin fruit to six inches apart.

2—Mulching Apple Trees.

Mulch sod-bound apple trees with straw or manure and note effect on growth, yield, size, color and quality of fruit, time of maturing and keeping qualities as compared with fruit from unmulched trees.

3—Home Gardening.

Plan and develop a home vegetable garden of from ¼ to ½ acre, keeping records of all expenses, including labor, yields and net returns.

4—Potato Culture.

Demonstrate the efficiency and practicability of growing potatoes by the mulching system.

5—Tomato Culture.

Demonstrate the relative merits of the practice of staking tomatoes as regards yields, maturity, disease, cost of production and net returns.

RURAL ECONOMICS

1—A System of Farm Cost Accounting and Records.

This project shall consist of the establishing of a cost accounting system upon a farm, and will be supplemented by all the necessary records for the type of farming studied.

2—Methods of Operating Farm Lands.

A study of the different methods of operating farms in a given community by owners and tenants will be made. The various forms of tenancy are to be studied both from the landlord's and tenant's point of view, with particular attention given to the points included in their contracts and how successfully they are worked out.

3—Types of Farming.

A survey of the types of farming in the home community; reasons for their development and suggestions for improvement.

4—An Analysis of the Farm Business.

A study in farm organization made by the analysis of figures collected from a number of farms in the community.

5—Relation of Farm Equipment to Size of Farm.

The relation of the kind and value of farm equipment to the size of farm and type of farming.

6—Rural Organization.

A study of the social and business relations of the residents of a rural community.

Registration for the Short Courses

It is necessary for the faculty of the College of Agriculture to know as accurately as possible the number of students who expect to attend the course in order that proper arrangements may be made for their accommodation.

All persons who expect to enroll in either of the Short Coures are requested to make application to the Secretary of the Entrance Board, Ohio State University, Columbus, Ohio.

FEES AND EXPENSES

The cost of a course at the University is the vital problem with many students. The expense of a year in college is very largely a personal matter, depending upon the economies or extravagances of the student. Some students will spend two or three times as much as others, consequently no fixed cost can be stated. The following is a list of expenses actually required the first year in the Short Courses. The expenses the next two years will be practically the same:

Incidental fee	$ 20 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposit to cover laboratory material	20 00
Uniform	12 00
Books	12 00
Board (20 weeks at $3.50 per week)	70 00
Room rent ($8.00 per month)	40 00
Total	$180 00

No account is taken in the above statement of general expenses, such as clothing, laundry, etc. One should plan to spend, in addition to the above amount, from $50.00 to $75.00 for other living necessities. The cost of some of the above items may be reduced slightly, such as room rent, in the event of two students rooming together.

A student should come prepared to spend about $50.00 during the first ten days of the term. After that his board and room rent will be the chief items of expense.

OPPORTUNITIES FOR SELF-HELP

Many students secure employment of different kinds to aid in defraying their college expenses. Many find employment on the University Farm, for which they are paid at the rate of 15 to 20 cents per hour. Others fire furnaces, mow lawns, wait on tables at boarding houses, clerk in stores on Saturdays. *The University does not guarantee or promise work to any one.* The matter of getting employment is left entirely to the student. One with initiative seldom experiences difficulty in finding as much employment as his time will permit.

It is to be remembered that the average student has all he can do to carry his college course without attempting to do outside work. To earn a living and carry a college course is practically impossible and usually culminates in the nervous breakdown of the student. If one expects to pay any large portion of his expenses by outside employment it is highly advisable to arrange to be in school longer than the time actually outlined in the course.

FREE SCHOLARSHIPS FOR THREE-YEAR SHORT COURSES

One scholarship is assigned to each county of the State, each year, and is good for three consecutive years in either the short course in Agriculture or the short course in Horticulture, thereby making a total of three scholarships in effect in each county at one time.

AWARDING OF SCHOLARSHIPS

These scholarships are awarded by the Agricultural Commission as prizes in the Junior Contest work conducted by the Commission.

1—The scholarship in each county shall be awarded to the contestant who is eligible to admission to the short courses and stands highest in the contest in which there is the greatest number of entries. In other words, if there are wheat growing, apple growing, corn growing, or any other contests conducted by the Commission, the winner of the first prize in the contest having the greatest number of participants shall be the recipient of the scholarship.

2—The recipient of the scholarship must be at least 17 years of age at the time of the beginning of the first term of school of the year in which the contest is held.

3—The scholarships are open to both sexes.

4—The scholarship must be used the first year it becomes available.

5—The scholarships are not transferable.

6—Should the recipient of the scholarship not desire the benefits of the same it will automatically revert to the next highest in the eligible list.

VALUE OF SCHOLARSHIP

The free scholarship will cover the registration fees. Its value will be $20.00 per year, or $60.00 for three years.

RULES GOVERNING SCHOLARSHIPS

All rules governing the awarding of free scholarships, as well as any change in the same, will be made by the State Agricultural Commission.

For further particulars address either the Ohio Agricultural Commission, Columbus, Ohio, or the Dean of the College of Agriculture, Ohio State University, Columbus, Ohio.

Students Judging Horses in Action

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AUG 13 1915

The Ohio State University Bulletin

VOLUME XIX JUNE, 1915 NUMBER 29

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OF THE
UNIVERSITY OF ILLINOIS

Three Year Short Courses in Agriculture and Horticulture

October 11 to March 17
1915-1916

PUBLISHED BY THE UNIVERSITY AT COLUMBUS

Entered as second-class matter November 17, 1905, at the postoffice at Columbus, Ohio, under Act of Congress, July 16, 1894

Students Waiting to Register in the College of Agriculture on Registration Day

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THE UNIVERSITY

The Ohio State University is a part of the educational facilities maintained by the State. It comprises ten colleges and a graduate school: (1) Agriculture, (2) Arts, Philosophy and Science, (3) Education, (4) Engineering, (5) Law, (6) Pharmacy, (7) Veterinary Medicine, (8) Medicine, (9) Homeopathic Medicine, (10) Dentistry and the Graduate School.

The College of Agriculture offers thirteen distinct courses of study:

1. A four-year course in Agriculture
2. A four-year course in Pomology and Vegetable Gardening
3. A four-year course in Floriculture
4. A four-year course in Landscape Architecture
5. A four-year course in Forestry
6. A four-year course in Home Economics
7. Combination Arts-Agriculture course (five years)
8. Combination Arts-Horticulture course (five years)
9. A short course in Agriculture (three years of five months each)
10. A short course in Horticulture (three years of five months each)
11. Two four-week courses in Dairying
12. An eight-week winter course in Agriculture
13. An eight-week winter course in Poultry Husbandry

Bulletins describing the work of any of the above colleges or courses will be sent upon request. Address University Editor, Columbus, Ohio.

THREE-YEAR SHORT COURSES IN AGRICULTURE

ANNOUNCEMENT

The short courses in the College of Agriculture are designed especially to meet the demands of young men on the farm who cannot find time to take the regular courses of the college or for those who have not the necessary educational requirements for admission to the longer courses. There has been a long-felt need for an agricultural course for the rural boy that will not take him away from the farm during the greater part of the growing season. There is also a feeling that the requirements for the four-year courses have been so high that many young men with high aspirations but only a common school education were barred. The short courses have been planned especially to overcome these objections and to meet the needs of the average farm boy.

The newly designed courses will replace the recent two-year courses in Agriculture and Horticulture and will provide very largely the same work except that they will extend over three years of five months each instead of two years of nine months each and will be given during the winter months (October-March). These courses are in no way supposed to equal, supplant, or be the equivalent of the four-year courses. Students having a high school education should take a four-year course.

REQUIREMENTS FOR ADMISSION

The short courses in both Agriculture and Horticulture are open to all students over 17 years of age who have completed the work of the eighth grade and have had one year of practical experience on the farm. A student must present a satisfactory certificate stating that he has had at least one year of practical experience on the farm since he was 12 years of age.

DATE OF OPENING

These courses will open this year on October 11 and will close March 17, 1916. A vacation will be given at the Holiday season.

OUTLINE OF SHORT COURSE IN AGRICULTURE

First Year

First Term	Hrs.	Second Term	Hrs.
Agricultural Chemistry (51)	4	Agricultural Chemistry (52)	4
Agronomy (51)	4	Agronomy (52)	4
Animal Husbandry (51)	4	Animal Husbandry (52)	4
Agricultural Engineering (51)	4	Dairying (52)	3
English (91)	3	English (92)	3
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1

Second Year

Horticulture (53)	4	Horticulture (54)	
Agronomy (53)	4	Agronomy (54)	4
Agricultural Chemistry (53)	4	Animal Husbandry (54)	4
Dairying (53)	3	Shopwork (52)	3
Shopwork (51)	3	Agricultural Engineering (52)	4
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1

Farm Project (carried during summer vacation) ... 2

Third Year

Rural Economics (51)	4	Rural Economics (52)	4
Forestry (51)	4	Agricultural Engineering (54)	4
Animal Husbandry (57)	4	Animal Husbandry (56)	4
Military Drill	1	Military Drill	1

Choice of two from each group below

Poultry Husbandry (59)	3	Animal Husbandry (60)	3
Veterinary Medicine (51)	3	Veterinary Medicine (52)	3
Horticulture (55)	4	Horticulture (56)	4
Bacteriology (51)	4	Zoology (92)	4
Agricultural Engineering (53)	4	Dairying (56)	4
Animal Husbandry (59)	4	Horticulture (58)	4
Horticulture (57)	4	Horticulture (60)	4
Botany (91)	4	Rural Economics (54	4
Rural Economics (53)	4		

Students Spraying in the University Orchard

OUTLINE OF SHORT COURSE IN HORTICULTURE

First Year

First Term	Hrs.	Second Term	Hrs.
Agricultural Chemistry (51)	4	Agricultural Chemistry (52)	4
Horticulture (51)	4	Horticulture (52)	4
Zoology (91)	4	Zoology (92)	4
Horticulture (53)	4	Horticulture (54)	4
English (91)	3	English (92)	3
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1

Second Year

Agronomy (53)	4	Agronomy (54)	4
Shopwork (51)	3	Shopwork (52)	3
Horticulture (55)	4	Horticulture (56)	4
Dairying (52)	3	Dairying (53)	3
Elective	3 or 4	Elective	3 or 4
Military Drill	1	Military Drill	1
Gymnasium	1	Gymnasium	1
Farm Projects (carried during summer vacation)			2

Third Year

Horticulture (57)	4	Horticulture (58)	4
Forestry (51)	4	Horticulture (60)	4
Rural Economics (51)	4	Rural Economics (52)	4
Elective	7 or 8	Elective	7 or 8
Military Drill	1	Military Drill	1

Electives

Animal Husbandry (59)	3	Animal Husbandry (60)	3
Bacteriology (51)	4	Dairying (56)	3
Dairying (57)	4	Dairying (58)	3
Animal Husbandry (51)	4	Animal Husbandry (52)	4
Horticulture (59)	4	Horticulture (66)	4
Horticulture (65)	4	Horticulture (64)	4
		Horticulture (62)	4

Certificates

At the conclusion of the course, students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent at the University.

DEPARTMENTS OF INSTRUCTION

AGRICULTURAL CHEMISTRY

The work in this department deals with the ingredients and food requirements of plants; the air and soil as sources of plant food; nature of soil, mechanical portion, nutritive portion, assimilable and reserve plant food; soil exhaustion and amelioration; barnyard manure, its sources, composition, preservation, and losses; commercial fertilizers and their rational use; home mixing of fertilizers; methods of determining the needs of the soil; composition of feeding stuffs and dairy products.

51-52. Application of Chemistry to Agriculture. Four hours. First and second terms. Short Courses in Agriculture and Horticulture.

Lectures, recitations and demonstrations on chemical elements concerned in plant growth. Ingredients of plants, essential and non-essential; sources of plant food, air, and soil. Nature of soil and plant food; soil exhaustion and amelioration; farm manures sources, composition and preservation; commercial fertilizers, their rational use; lime and other soil amendments.

53. Chemistry of Plants. Four hours. First term. Prerequisite' Course 51 or equivalent.

Composition of plants, ash, protein, fat, carbohydrates, fiber. Changes in plant growth. Factors effecting composition; chemical changes involved in preparation and preservation of foods. Feeding standards and nutritive ratio.

AGRICULTURAL ENGINEERING

The work in this department covers four distinct lines: (1) In the study of farm machinery an effort is made to familiarize the student with the fundamental principles underlying the leading types of farm machines, comparisons being made between the standard makes of implements. (2) Application of power to farming operations. Consideration is given to tractors, small engines, windmills, water power, horse power, etc. (3) Farm structures. Instruction is given pertaining to the locating and planning of farm buildings, estimating the cost of materials for buildings, paints and painting, and concrete work in its

various applications to the farm. (4) Drainage is considered from the field end of the work. Practice is given in the use of the drainage level, staking out systems, and establishing grades.

51. Farm Structures. Four credit hours. Either term. Mr. Ramsower.

Lectures and laboratory covering (a) laying out the farm and locating the buildings; (b) construction of farm buildings, building materials, ventilation, painting, etc.; (c) designing and drawing general farm barns, horse barns, dairy barns, hog houses, farm residence etc.; (d) concrete and its uses.

52. Farm Machinery. Four credit hours. Either term. Mr. Ramsower.

Lectures and laboratory covering the construction, operation, adjustment, assembling, and testing of the more common types of farm machines, including plows, tillage tools, seeding machinery, harvesters, etc.

53. Drainage. Three credit hours. First term. Elective. Mr. Ramsower.

Lectures and laboratory covering the detailed cost of drainage systems, size of tile, use of level, etc.

54. Farm Power. Four credit hours. Second term. Mr. Ramsower.

A study of power on the farm, including gasoline, oil and steam engines, windmills, water supply, and lighting systems.

AGRONOMY

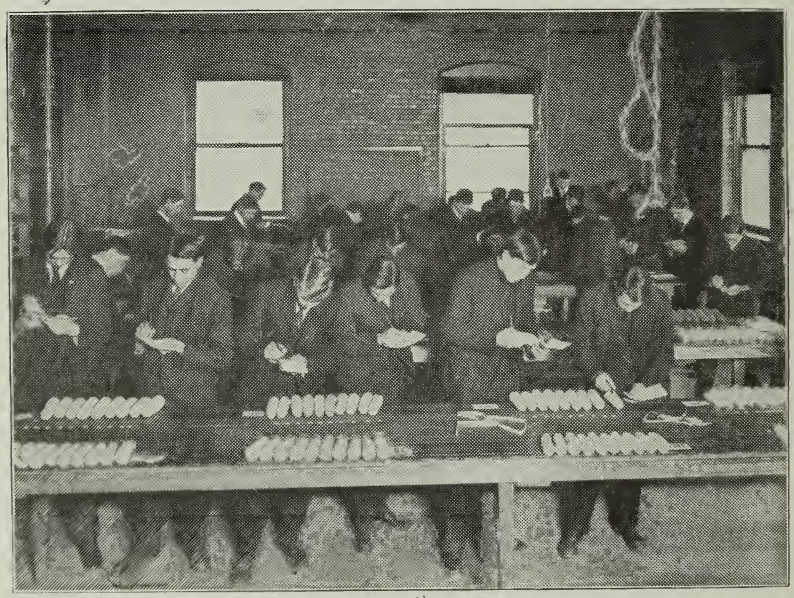
The work in the Department of Agronomy covers the subjects of farm crops and soil management. The first year is devoted to a study of the important crops with reference to Ohio conditions, with additional work in seed selection and testing, cultural methods, and harvesting of the grain and forage crops. The course offered the second year is devoted to the study of the soils by means of classroom lectures and laboratory and field exercises with special emphasis upon their management for maximum crop production. The work will consist of a practical discussion of the origin, chemical and physical composition of soils, and the use of rotations, manures, and commercial fertilizers in the maintenance of soil fertility.

51-52. Crop Production. Four credit hours. The year. Mr. Livingston.

The first half of the year will be devoted to the study of corn and the small grain cereals, while the work of the second half will cover the forage crops and grasses. The course will include: (1) a brief discussion of the botanical relationship of the different crops, their distribution and relative importance; (2) a study of the selection and the care of the seed, the preparation of the seed-bed, cultural methods and the harvesting of the crop. The laboratory work is planned to give the student training in the classification of the different crops, the identification of noxious weeds, and the selection of corn and small grains for show and seed purpose.

The work is planned with special reference to Ohio conditions.

53-54. Soil Management. Four credit hours. The year. Mr. McCall.

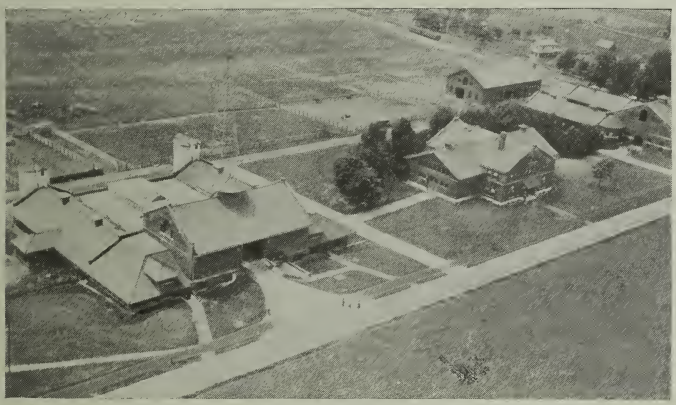


Corn Judging

A brief account of the origin of the soil and its physical and chemical composition, followed by a detailed study of management of the soil with reference to the maintenance of the productive capacity of Ohio farms. The attention of the student is directed to the necessity of making a study of his own soil for the purpose of determining the factors which are limiting his crop production. Cultural methods are discussed with special reference to the preparation of the seed-bed and the use of farm manures and commercial fertilizers.

ANIMAL HUSBANDRY

Courses in this department include studies in the history, development, characteristics, and adaptations of the various breeds of horses, cattle, sheep, and swine; practice work in judging by the use of standard score cards and by judging groups, illustrated with living specimens from the University flocks and herds; the principles of nutrition, the composition of various feeding stuffs and the bearing of this data upon the practices of the feeder; the principles of breeding and their application to the methods concerned in the improvement of live stock; and the principles and practical phases of live stock management, including both commercial and pure-bred aspects. Further opportunities for special study in dairy cattle are offered.



Bird's-eye View of the Live Stock Buildings

51-52. Types and Breeds of Live Stock. Four credit hours. The year.

Text-book and discussion of the history, characteristics, adaptability, economic value, etc., of types and breeds of farm live stock. Practical work in judging for three hours per week, both score card and comparative judging being used.

54. Feeding. Three credit hours. Second term. Second year.

A study of the principles of nutrition, character and composition of feed stuffs and methods of feeding different kinds of farm animals under various conditions.

53. Dairy Cattle. Four credit hours. First term.

This course will provide for a study of the different breeds of dairy cattle. Three hours a week will be devoted to judging work, including score card and comparative judging.

56. Breeding Live Stock. Four credit hours. Second term. Third year. Prerequisite, Animal Husbandry 51 and 52.

57-58. Live Stock Management. Four credit hours. The year. The course will consist of lectures and laboratory periods relative to proper methods of managing herds of live stock. Horses, cattle, sheep, and swine will be given consideration.

Poultry Husbandry

Equipment for Poultry Husbandry consists of a laying house, pens of all breeds of poultry, brooder house, colony houses, farm poultry house, and incubator cellar. Instruction is given in breeding, feeding, incubating, natural methods of hatching and rearing chicks, turkeys, ducks, and geese; much time is devoted to judging and scoring poultry; each student is required to care for incubators for a number of weeks.

59-60. Poultry Husbandry. Three credit hours. The year. Mr. Jacoby.

Two lectures and one laboratory period a week covering the following subjects: breeds and breeding, feeding, housing, marketing, natural and artificial incubation and brooding, and poultry diseases.

BACTERIOLOGY

The courses offered in this department deal with the different types of bacteria and their activities, with special reference to the ones connected with soil operations and diseases of the soil; the part played by bacteria in the souring of milk, ripening of cream, sanitation of the dairy; contamination of food products and drinking water; the common infectious diseases, causes and methods of combatting them.

51. General. Four hours. First semester.

This work is designed especially for short course students. The student is instructed as to what bacteria are, the ordinary tests used in their identification, and how they are grown artificially for study and use. Bacteria in relation to the commoner diseases of human beings and of animals are discussed. Bacteria in reference to the dairy industries and their relationship to soil fertility are considered.

The Central Part of the Campus

DAIRYING

The Department of Dairying offers the following lines of work: selection of dairy farms; selection and formation of profitable dairy herds; breeding of dairy cows for greater milk production; feeding dairy cows for more economical milk and butter-fat production; testing of cows

for the Advanced Registries; the building of sanitary dairy barns and calf barns; milk bottling, buttermaking, cheesemaking, ice cream-making, and construction of refrigerating plants. Lectures and laboratory work will be given in city milk supply, the testing of dairy products, and the manufacture of butter, cheese, ice cream, and condensed milk.

52. Elementary Dairying. Three credit hours. Either term. First year. Mr. Erf, Mr. Cunningham, Mr. Stoltz.

Lectures will be given on the formation of profitable herds; feeding and care of dairy cows as related to the economical production of milk; feeding and testing individual cows and herds for butter-fat; and entering of cows in the Advanced Registry. In the laboratory practical work will be given in testing milk and cream for butter-fat and testing dairy herds for butter-fat production.

53. Business of Dairying. Three credit hours. First term. Second year. Mr. Erf, Mr. Cunningham, Mr. Stoltz, Mr. Clevenger.

Lectures will be given on laws and regulations relating to the composition of dairy products, the handling of milk on the farm, and the manufacture of dairy products on the farm. Laboratory work will be given in testing cream, butter, and cheese, the handling and manufacture of butter and cheese, and the designing of dairy barns and milk houses.

56. Specialized Dairying. Three credit hours. Time to be arranged.

This course is intended for those who wish to specialize in Dairy Farm Management, City Milk Supply, Buttermaking, Cheesemaking or Ice Creammaking. The work is largely laboratory work, supplemented with lectures.

57-58. Specialized Dairying. Four credit hours. The year. Time to be arranged.

This course is intended for those who wish to specialize in Dairyng. It embraces farm management, the equipment and operation of the dairy farm, the making and marketing of butter, the making and marketing of cheese, the sanitary production of milk and the marketing of the same, and the manufacture of ice cream. The work is largely laboratory work supplemented by lectures.

ENGLISH

Students in the Short Courses will be obliged to do a considerable amount of work in composition, paragraph-writing, punctuation, spelling, grammatical construction, speaking and debating.

91-92. Paragraph Writing. Three credit hours. The year. Description, narration, exposition, and argumentation.

FORESTRY

Work in this department will deal with history of forestry, its objects and economic importance; the relation of forests and woodlands to soil, climate, and general welfare; care of farm woodlots; plantations for post and pole timber; cultivation and management of trees for specific purposes such as windbreaks, hedges, shade and ornament, maple syrup, nuts, etc.; treatment of diseased and injured trees, together with a study of the trees and shrubs on the campus and University woodlot.

51. Introduction to Forestry. Four credit hours. First term. Lectures, laboratory, and field work.

This course will present a brief history of forestry, pointing out its objects and economic importance. The relation of forests and woodlands to soil, climate, streamflow and general welfare. The economic value of a good timber supply; improvement and care of woodlots; special plantations for post and pole timber; planting and management of forest trees for specific purposes such as windbreaks, hedges, shade and ornament, maple syrup, nuts, etc. A prominent feature of the course will be getting acquainted with the trees and shrubs on the campus and University woodlots.

HORTICULTURE

In this department is given practical instruction in the problem of fruit growing, relating especially to the home or farm orchard and small fruits. It includes propagation, pruning, budding, and grafting, spraying for the different orchard pests, cultivating, harvesting, and all operations relative to orcharding; a through course in vegetable gardening covering cultural methods, soil and fertilizer requirements, favorable climatic conditions and locations, with each garden vegetable separately considered; landscape gardening, covering the making of

lawns, walks, drives, the correct planting of trees, shrubs and flowers for the external adornment of home and public grounds. The new Horticultural Building will enable the department to greatly elaborate the work in this line.

51. Horticultural Plant Forms. Four credit hours. First term. Mr. Davis.

A study of plant forms with special reference to horticultural crops.

52. Horticultural Plant Forms. Four credit hours. First year. Second term.

A continuation of Horticulture 51.

53. Principles of Horticulture. Four credit hours. First term. Mr. Davis.

54. Principles of Horticulture. Four credit hours. Second term. Mr. Davis.

A continuation of Course 53.

55. Vegetable Gardening. Four credit hours. First term. Mr. Montgomery.

A study of the location of gardening enterprises, plans, soils, seeds, manures and fertilizers, irrigation, and the culture, harvesting, and marketing of the more important home and commercial garden vegetables. Prerequisite, Course 53-54.

56. Vegetable Gardening. Four credit hours. Second term. Mr. Montgomery.

A continuation of Course 55.

57. Pomology. Four credit hours. First term. Course in Horticulture. Elective for agricultural students. Mr. Paddock.

Prerequisite, Horticulture 53-54.

58. Pomology. Four credit hours. Second term.

A continuation of Course 57. Mr. Paddock.

59. Pomology. Four credit hours. First term. Elective. Course in Horticulture. Mr. Paddock.

A continuation of Courses 57 and 58. Prerequisite, Horticulture 57-58.

60. Landscape Gardening. Four credit hours. Second term. Course in Horticulture. Elective for agricultural students. Mr. Montgomery.

A study of the theory and practice of home landscape ornamentation, including the selection, arrangement, and care of trees, vines, and shrubbery, the making and care of lawns, and the use of herbaceous and annual flowering plants. Working plans for the improvement of individual home grounds are prepared. Prerequisite, Agricultural Engineering 53.

A Pruning Class

62. Vegetable Forcing. Four credit hours. Second term. Mr. Montgomery:

A study of greenhouse construction and management, including heating, ventilating, watering, fumigation and sterilization, soils, temperatures, fertilizers, and the general culture of the important greenhouse vegetable crops.

64 Vegetable Gardening. Four credit hours. Second term. Course in Agriculture. Mr. Montgomery.

The culture of vegetables in the home garden is especially emphasized. The location of gardens, soils, size, and arrangement of garden

space, seeds, planting, and general culture of the more important vegetable crops, including irrigation, fertilizers, disease, and insect control, are special features considered.

65. Floriculture. Four credit hours. First term. Course in Horticulture. Mr. Montgomery.

A study of the principles of commercial flower culture, including soils, propagation, potting, benching, fertilizing, and general greenhouse practices, such as heating, ventilation, fumigation, and spraying. Important florist crops receive individual attention.

66. Floriculture. Four credit hours. Second term. Course in Horticulture. Mr. Montgomery.

A continuation of Course 65. Prerequisite, Horticulture 65.

RURAL ECONOMICS

The work in this department deals with principles of accounting and their application to farm practice, different systems of keeping farm records, different systems of farm management, cost of producing and marketing farm products; methods of renting, leasing, and operating farm lands. Special attention is paid to different advantages and problems of each system of farm management, together with their effect upon the soil; a study of production, distribution, transportation, and marketing of agricultural products; cooperative organizations of agriculture; cooperative management, insurance, and rural credit; rural social life and organizations. Trips are taken frequently to nearby farms for study and comparison of different systems followed.

51. Farm Accounts and Records. Four credit hours. First term.

The course deals with the fundamental principles of bookkeeping and their application to farm records.

52. Farm Management. Four credit hours. Second term.

Lectures, recitations, and visits to farms in the vicinity of Columbus. The course includes a study of systems of farm management, the cost of producing and marketing farm products, and methods of renting, leasing, and operating farm lands.

53. Cooperation in Agriculture. Four credit hours. First term.

Lectures and recitations on the cooperative organizations of agriculture. Cooperative management of agriculture products, agricultural credit, insurance, and manufacturing of agricultural products are studied.

54. Rural Community Life. Four credit hours. Second term.

Lectures and recitations on rural social life. Study of rural organizations and their relation to country life.

Corn Field

SHOPWORK

Two distinct courses are given in shopwork: carpentry and forging. The former includes sawing, planing, mortising, framing and other work involving the work of simple carpenter tools. In forging is taught the use and care of the forge, fire, and tools; practice in steel forging, including such operations as cutting, bending, drawing, shaping, and welding; the making, hardening, and tempering of steel punches, drills, and cold chisels.

51. Carpentry. Three credit hours. Either term.

Practice in carpentry, including sawing, planing, mortising, framing, etc.

52. Forging. Three credit hours. Either term.

Practice in steel and iron forging, including such operations as cutting, bending, drawing, upsetting, shaping, and welding iron; hardening and tempering steel, etc.

ZOOLOGY AND ENTOMOLOGY

This department offers systematic study of the different groups of insects with particular stress laid upon the injurious and beneficial insects; the proper times and methods for controlling and combatting the parasitic insects; the economic importance of insects in agriculture; preparation of collections, etc.

91-92. Systematic and Practical Entomology. Four credit hours. The year.

VETERINARY MEDICINE

Courses are given in this department, which deal with the more common disorders and diseases of domestic animals; common infectious diseases, minor surgery, castration. horse-shoeing, and soundness are carefully considered; a brief study is made of the anatomy of the horse and the ox.

51. Agricultural Veterinary Medicine. Three credit hours. First term. Mr. Lambert.

This course will consist of a brief outline of the anatomy of horse and cattle, with special reference to the conformation of animals. Instruction will be given by lectures, quizzes and demonstrations.

52. Agricultural Veterinary Medicine. Three credit hours. Second term. Mr. White.

This course will include a description of minor surgery, horse-shoeing, soundness, and a brief discussion of the causes, symptoms and methods of handling the most important infectious diseases of Ohio live stock.

FARM PROJECTS

In order to satisfy the requirements of the Short Courses, the student is required during the vacation between the second and third years to carry out on the farm, one of the projects from the list below. The election of this project must be made before the end of the second year and registered with the Secretary of the College. Each student's work will be surpervised and inspected by the department in which the project has been chosen. The following are the projects which are submitted by the various departments:

AGRICULTURAL ENGINEERING

1—Design and Construction of Farm Buildings.

The student will be required to prepare plans of various types of farm buildings and also to construct smaller buildings such as poultry houses, individual hog houses, implement sheds, etc.

2—The Use and Handling of Cement and Concrete.

The aim of this project is to give the student practice in the handling of concrete. This will embrace the designing of forms and actual construction of some piece or pieces of concrete work, such as watering trough, fence posts, floors, walks, milk houses, garages, cement tile, etc.

3—Laying out and Installing a Drainage System.

The student will be required to lay out and map a drainage system covering several acres, perform the necessary leveling work and execute at least a portion of the planning.

4—The Design and Installation of Home and Farm Conveniences.

This includes the preparation of plans covering the design or installation or both, of such pieces of work as water supply system, a lighting system, sewage disposal system, etc.

5—Testing the Draft of Farm Implements.

The student will be furnished with proper equipment for the study of the draft of various implements used on the farm.

ANIMAL HUSBANDRY

1—Hog Feeding.

The feeding of hogs in which a comparison is made of the influence of corn alone as a ration, with corn and tankage or skimmed milk.

2—Township Survey of Purebred Stock.

A local township survey of improved herds in comparative study with unimproved.

3—Cost of Feeding Dairy Cattle.

The keeping of records of cost of feed and keep, and yield of milk of dairy cows.

4—Lamb Management.

The care and management of lambs from birth to five months of age.

5—Feeding Work Horses.

The feeding of work horses, in which comparisons are made of the influence of two different rations fed two different horses in the same work team.

6—Cost of Feeding Fattening Cattle.

On the cost of keeping and feeding fattening cattle.

DAIRYING

For the second and third summer seasons of the three-year course in agriculture.

1—Cost of Milk and Butterfat Production.

Keeping a cost account of the milk and butterfat production of the home herd.

2—Liberal Feeding vs. Conservative Feeding.

The profitableness of liberal feeding compared with conservative feeding—the herd to be divided into two lots, one lot of cows to be fed liberally and the other conservatively (supposed to be the average economic condition).

3—Profits from Improved Rations.

Determining the profits from feeding various improved rations in comparison with the ration already in vogue on the farm.

4—Profitable Methods of Feeding Dairy Calves.

Most profitable methods of feeding dairy calves to get the greatest returns when they are two-year-old heifers.

5—Cost of Buttermaking at Home.

The profitableness and the cost of making butter at home. Samples to be sent to the University each week to be scored.

6—Cost of Home Cheesemaking.

Profitableness and cost of making cheeses at home. Samples to be sent to the University each week to be scored.

FARM FORESTRY

1—Planting Trees for Farm Use.

Planting seedling catalpa, locust, and other trees for farm use and measuring growth.

2—Germination of Seeds of Forest Trees.

Planting seed of forest trees; noting their germination and measuring growth.

3—Survey of Woodlots.

Pasturing woodlots; amount and kind of stock; advantages and disadvantages of each kind.

4—Rate of Growth of Trees.

Measuring diameter growth of trees to learn annual increase, and time when growth is most rapid.

5—Census of Woodlot.

Listing the kind of trees in a farm woodlot, and finding the number and average size of each.

6—Survey of Diseased Trees in Woodlot.

Noting diseased and deformed trees in a farm woodlot with report of causes.

FIELD CROPS

1—Variety Testing.

The testing of varieties and strains of cereals and other field crops with reference to disease resistance, character of growth, quality, yield, etc.,

2—Individual Selection.

Investigating the yielding qualities and other characters of ears of corn, heads of small grains, individual plants of soy beans and other forage crops.

3—Rates of Seeding.

Investigation to determine the best rate at which to seed the various field crops.

4—Inoculation Test.

Investigation of the various methods of inoculating soils for leguminous crops.

5—Preparation of Seed Bed.

Comparison of the methods of preparing seed beds for the various field crops. Such problems as early and late plowing, deep and shallow plowing for corn and other crops are examples of experiments included in the project.

HORTICULTURE

1—Thinning Apples.

First pick off all wormy, diseased inferior fruit and reduce clusters to one fruit. Second. Same as No. 1, and thin fruit to four inches apart. Third, same as No. 1, and thin fruit to six inches apart.

2—Mulching Apple Trees.

Mulch sod-bound apple trees with straw or manure and note effect on growth, yield, size, color and quality of fruit, time of maturing and keeping qualities as compared with fruit from unmulched trees.

3—Home Gardening.

Plan and develop a home vegetable garden of from ¼ to ½ acre, keeping records of all expenses, including labor, yields and net returns.

4—Potato Culture.

Demonstrate the efficiency and practicability of growing potatoes by the mulching system.

5—Tomato Culture.

Demonstrate the relative merits of the practice of staking tomatoes as regards yields, maturity, disease, cost of production and net returns.

RURAL ECONOMICS

1—A System of Farm Cost Accounting and Records.

This project shall consist of the establishing of a cost accounting system upon a farm, and will be supplemented by all the necessary records for the type of farming studied.

2—Methods of Operating Farm Lands.

A study of the different methods of operating farms in a given community by owners and tenants will be made. The various forms of tenancy are to be studied both from the landlord's and tenant's point of view, with particular attention given to the points included in their contracts and how successfully they are worked out.

3—Types of Farming.

A survey of the types of farming in the home community; reasons for their development and suggestions for improvement.

4—An Analysis of the Farm Business.

A study in farm organization made by the analysis of figures collected from a number of farms in the community.

5—Relation of Farm Equipment to Size of Farm.

The relation of the kind and value of farm equipment to the size of farm and type of farming.

6—Rural Organization.

A study of the social and business relations of the residents of a rural community.

MILITARY DRILL

In accordance with the Morrill act of 1862, under which the University was established, military instruction must be included in the curriculum. The Board of Trustees, therefore, requires all students to drill two years unless excused by the Military and Gymnasium board. This work is under an officer of the regular army. The short course students are obliged to take military drill throughout the three years at the University.

Part of the Dairy Herd

FEES AND EXPENSES

The cost of a course at the University is the vital problem with many students. The expense of a year in college is very largely a personal matter, depending upon the economies or extravagances of the student. Some students will spend two or three times as much as others, consequently no fixed cost can be stated. The following is a list of expenses actually required the first year in the Short Courses The expenses the next two years will be practically the same:

Incidental fee	$ 20 00
Ohio Union	2 00
Gymnasium locker	4 00
Deposit to cover laboratory material	20 00
Uniform	12 00
Books	12 00
Board (20 weeks at $3.50 per week)	70 00
Room rent ($8.00 per month)	40 00
Total	$180 00

No account is taken in the above statement of general expenses, such as clothing, laundry, etc. One should plan to spend, in addition to the above amount, from $50.00 to 75.00 for other living necessities. The cost of some of the above items may be reduced slightly, such as room rent, in the event of two students rooming together.

A student should come prepared to spend about $50.00 during the first ten days of the term. After that his board and room rent will be the chief items of expense.

OPPORTUNITIES FOR SELF-HELP

Many students secure employment of different kinds to aid in defraying their college expenses. Many find employment on the University Farm, for which they are paid at the rate of 15 to 20 cents per hour. Others fire furnaces, mow lawns, wait on tables at boarding houses, clerk in stores on Saturdays. *The University does not guarantee or promise work to any one.* The matter of getting employment is left entirely to the student. One with initative seldom experiences difficulty in finding as much employment as his time will permit.

It is to be remembered that the average student has all he can do to carry his college course without attempting to do outside work. To earn a living and carry a college course is practically impossible and usually culminates in the nervous breakdown of the student. If one expects to pay any large portion of his expenses by outside employment it is highly advisable to arrange to be in school longer than the time actually outlined in the course.

Making Alfalfa Hay on the University Farm

FREE SCHOLARSHIPS FOR THREE-YEAR SHORT COURSES

One scholarship is assigned to each county of the State, each year, and is good for three consecutive years in either the short course in Agriculture or the short course in Horticulture, thereby making a total of three scholarships in effect in each county at one time.

Awarding of Scholarships

These scholarships are awarded by the Agricultural Commission as prizes in the Junior Contest work conducted by the Commission.

Who Receives a Scholarship

1—The scholarship in each county shall be awarded to the contestant who is eligible to admission to the short courses and stands highest in the contest in which there is the greatest number of entries. In other words, if there are wheat growing, apple growing, corn growing, or any other contests conducted by the Commission, the winner of the first prize in the contest having the greatest number of participants shall be the recipient of the scholarship.

2—The recipient of the scholarship must be at least 17 years of age at the time of the beginning of the first term of school of the year in which the contest is held.

3—The scholarships are open to both sexes.

4—The scholarship must be used the first year it becomes available.

5—The scholarships are not transferable.

6—Should the recipient of the scholarship not desire the benefits of the same it will automatically revert to the next highest in the eligible list.

Value of Scholarship

The free scholarship will cover the registration fees. Its value will be $20.00 per year, or $60.00 for the three years.

Rules Governing Scholarships

All rules governing the awarding of free scholarships, as well as any change in the same, will be made by the State Agricultural Commission.

For further particulars address either the Ohio Agricultural Commission, Columbus, Ohio, or Dean of College of Agriculture, Ohio State University, Columbus, Ohio.

Registration for the Short Courses

It is necessary for the faculty of the College of Agriculture to know as accurately as possible the number of students who expect to attend the course in order that proper arrangements may be made for their accommodation.

All persons who expect to enroll in either of the Short Courses are required to fill out the blank below and return it promptly to the University. For further information in regard to the Short Courses or other courses offered in the College of Agriculture, address

DEAN OF THE COLLEGE OF AGRICULTURE,
The Ohio State University,
Columbus, Ohio.

Application for Admission

I hereby apply for admission to the Short Course in.....

.....* for the term beginning October 11, 1915.

Name .....

Postoffice .....

County ....Age .....

How long have you lived on a farm?.....

What schools have you attended besides common schools, and how long?

.....

Date.....1915

* Applicants are requested to state which course (Agriculture or Horticulture) they wish to take.

Students Judging Horses in Action